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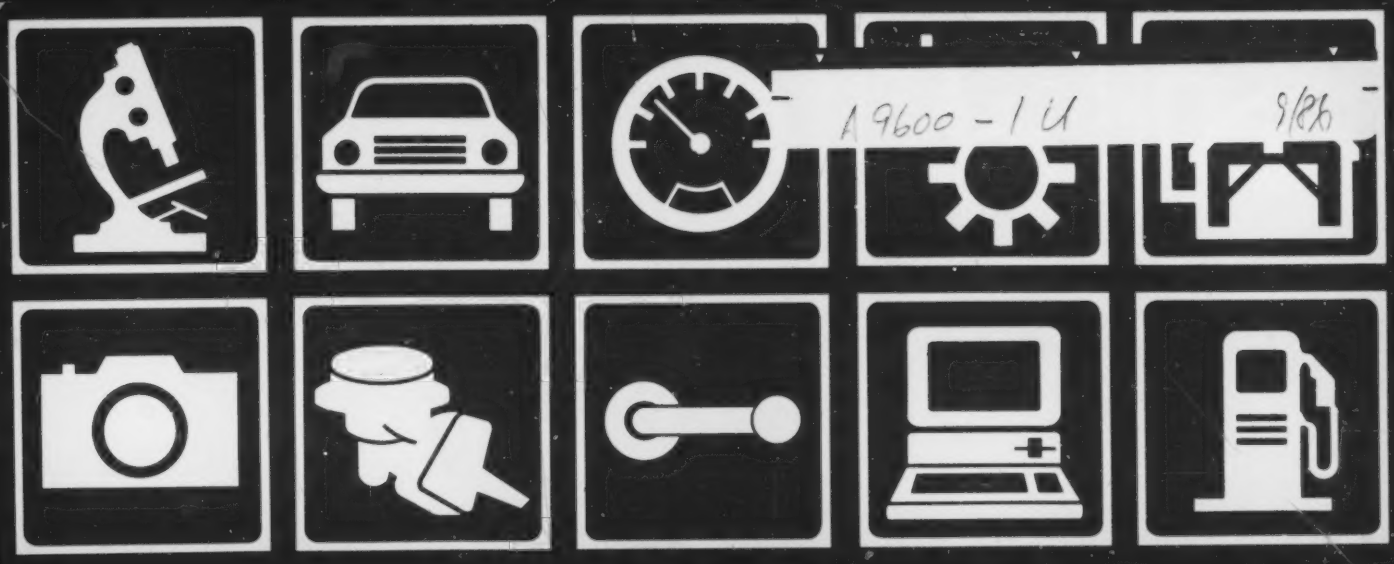
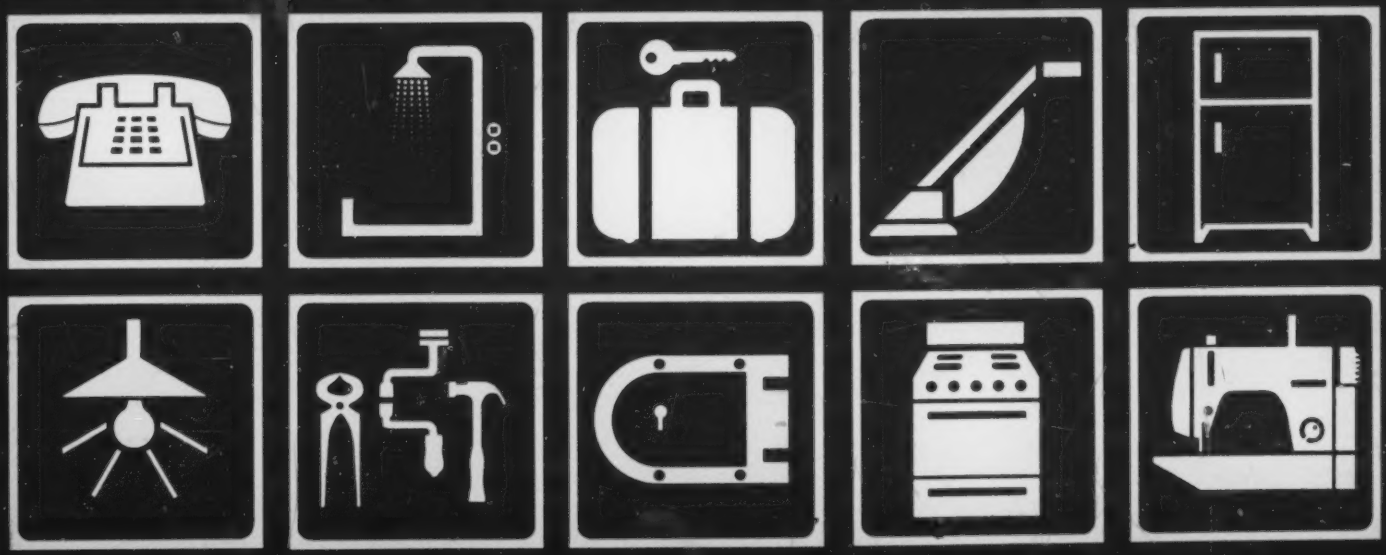


U.S. MARKETS FOR ZINC DIE CASTING 1980-84



U.S. Zinc Die Casting Tonnage

1984	287,894 Tons
1983	296,863 Tons
1982	266,544 Tons
1981	304,188 Tons
1980	313,807 Tons

Table 1
Market-by-Market Analysis (Tonnage)

Automotive Components	1984	101,334 Tons	35.2%
	1983	100,719 Tons	33.9%
	1982	88,125 Tons	33.1%
	1981	98,712 Tons	32.5%
	1980	103,593 Tons	43.3%
Builders Hardware	1984	76,238 Tons	26.5%
	1983	81,071 Tons	27.3%
	1982	72,057 Tons	27.0%
	1981	79,710 Tons	26.2%
	1980	83,767 Tons	26.7%
Electrical Components	1984	42,691 Tons	14.8%
	1983	36,841 Tons	12.4%
	1982	34,996 Tons	13.1%
	1981	38,427 Tons	12.6%
	1980	41,666 Tons	13.3%

Industrial, Agricultural and Commercial Machinery	1984		23,543 Tons	8.2%
	1983		25,755 Tons	8.7%
	1982		21,519 Tons	8.1%
	1981		25,719 Tons	8.5%
	1980		28,014 Tons	8.9%
Domestic Appliances	1984		21,944 Tons	7.6%
	1983		26,816 Tons	9.0%
	1982		20,704 Tons	7.8%
	1981		26,897 Tons	8.8%
	1980		25,128 Tons	8.0%
Miscellaneous Industries	1984		10,446 Tons	3.6%
	1983		11,443 Tons	3.9%
(Scale 2:1)	1982		11,912 Tons	4.5%
	1981		15,465 Tons	5.1%
	1980		12,808 Tons	4.1%
Sporting Goods and Toys	1984		5,497 Tons	1.9%
	1983		7,447 Tons	2.5%
(Scale 2:1)	1982		7,818 Tons	2.9%
	1981		8,663 Tons	2.9%
	1980		10,220 Tons	3.2%
Scientific and Professional Equipment	1984		3,620 Tons	1.3%
	1983		4,131 Tons	1.4%
	1982		6,770 Tons	2.5%
(Scale 2:1)	1981		7,556 Tons	2.4%
	1980		4,642 Tons	1.5%
Sound and Television Equipment	1984		2,581 Tons	0.9%
	1983		2,640 Tons	0.9%
	1982		2,643 Tons	1.0%
(Scale 2:1)	1981		3,038 Tons	1.0%
	1980		3,969 Tons	1.3%

U.S. Zinc Die Casters

Table 2
Market-by-Market Analysis (Die Casters)

Automotive Components	1984	189 Die Casters	47%
	1983	197 Die Casters	48%
	1982	216 Die Casters	52%
	1981	198 Die Casters	46%
	1980	206 Die Casters	47%
Builders Hardware	1984	217 Die Casters	54%
	1983	227 Die Casters	55%
	1982	234 Die Casters	56%
	1981	233 Die Casters	54%
	1980	243 Die Casters	55%
Electrical Components	1984	159 Die Casters	39%
	1983	167 Die Casters	41%
	1982	165 Die Casters	39%
	1981	164 Die Casters	38%
	1980	186 Die Casters	42%

Industrial, Agricultural and Commercial Machinery	1984	[redacted]	178 Die Casters	44%
	1983		188 Die Casters	46%
	1982		177 Die Casters	42%
	1981		181 Die Casters	42%
	1980		192 Die Casters	43%
Domestic Appliances	1984	[redacted]	126 Die Casters	31%
	1983		133 Die Casters	32%
	1982		133 Die Casters	32%
	1981		140 Die Casters	33%
	1980		144 Die Casters	33%
Miscellaneous Industries	1984	[redacted]	107 Die Casters	27%
	1983		118 Die Casters	29%
	1982		111 Die Casters	26%
	1981		118 Die Casters	28%
	1980		116 Die Casters	26%
Sporting Goods and Toys	1984	[redacted]	79 Die Casters	20%
	1983		70 Die Casters	17%
	1982		82 Die Casters	20%
	1981		86 Die Casters	20%
	1980		93 Die Casters	21%
Scientific and Professional Equipment	1984	[redacted]	94 Die Casters	23%
	1983		92 Die Casters	22%
	1982		96 Die Casters	23%
	1981		98 Die Casters	23%
	1980		102 Die Casters	23%
Sound and Television Equipment	1984	[redacted]	53 Die Casters	13%
	1983		57 Die Casters	14%
	1982		51 Die Casters	12%
	1981		65 Die Casters	15%
	1980		76 Die Casters	17%

U.S. Markets for Zinc Die Casting

Consumption of domestically produced zinc die castings dropped three percent in terms of tonnage in 1984, according to an analytical survey by Zinc Institute (ZI). The study found that of the nine major markets for zinc die castings, only the automotive and electrical components sectors registered consumption upturns.

Based on figures supplied directly to ZI by the nation's 404 zinc die casters, the survey reported that the parts makers utilized 287,894 tons of zinc in 1984, compared to 296,863 the previous year. The 8,969 ton decrease is a partial reversal of a more than 30,000 ton gain that U.S. zinc die casters enjoyed in 1983.

A market-by-market analysis of the results reveals that automotive components led all other end-use categories, which has been the tradition for decades. Die casters who build car parts used 101,334 tons of zinc in 1984, up .6% from the 1983 total of 100,719 tons. The result: automotive components accounted for a 35.2 percent share of the total market, increasing from 33.9 percent the year before.

As in previous years, the building components sector placed second with a 26.5 percent market share—a slight decrease from the 1983 figure of 27.3 percent. The reduction was due to a six percent drop in consumption from 81,071 to 76,238 tons.

Bolstered by a 15.9 percent rise in zinc usage, electrical components gained market share, with the percentage rising from 12.4 to 14.8. Tonnage consumed to make electrical parts rose from 36,841 tons to 42,691.

Despite a .5 percent loss in market share, casters of industrial, agricultural and commercial machinery, who make parts for equipment ranging from computers to combines, moved up in the survey. The category jumped from fifth to fourth place on the survey list, while registering an 8.6 percent drop in consumption from 25,755 tons to 23,543 tons. Market share slipped accordingly from 8.7 percent to 8.2 percent.

Domestic appliances registered the largest market share loss, dropping from 9.0 percent to 7.6 percent. The shift moved the end-use sector from fourth to fifth place on the zinc die casting consumption list, with a total of 21,944 tons deployed in 1983, compared to 26,816 the previous year. The resulting percentage loss was 18.2 percent.

The four end-use categories which are the traditional back-markers in the ZI survey each suffered losses in 1984. Zinc consumption in the miscellaneous industries classification dropped from 11,443 to 10,446 tons, with market share declining from 3.9 to 3.6 percent.

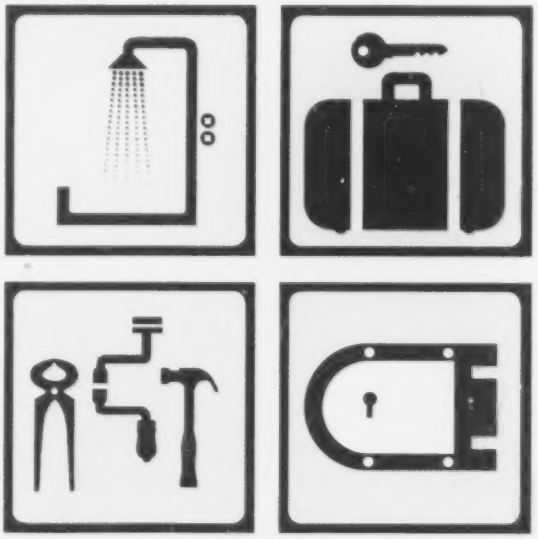
Sporting goods and toys were also weak players, experiencing a market share loss from 2.5 to 1.9 percent. Reason: a 26.2 percent decline in zinc consumption, from 7,447 to 5,497 tons.

The category of scientific and professional equipment slipped 12.4 percent in 1984. The classification went from 4,131 tons to 3,620 tons and dropped in market share from 1.4 to 1.3 percent.

The final end-use sector—sound and television equipment—was relatively stable, inching down from 2,640 to 2,581 tons. Market share remained constant at 0.9 percent.

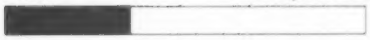
Automotive Components

Builders Hardware



Electrical Components

1984	101,334 Tons	35.2%
1983	100,719 Tons	33.9%
1982	88,125 Tons	33.1%
1981	98,712 Tons	32.5%
1980	103,593 Tons	33.0%

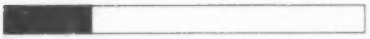


(Scale: 1:2)

Zinc die castings manufactured for the automotive market at 101,334 tons were 35.2% of total 1984 sales. The rise reflects the rebounding year automakers had in 1984. In addition, ThinWall zinc continued to be an important factor with the introduction of 1985 models in the fall of 1984. The lighter castings increased zinc applications, but also reduced the amount of zinc used in each component. Die casters in this market were 189 in number, 47% of the total.

The market consists of handles and locks, mechanical components, electrical components, body hardware and trim, lamp and lighting fittings, instruments and other automotive components. Pounds of zinc die castings per average car, again reflecting the increased use of ThinWall, dropped from nearly 25 in the 1980 models, to 24.2 in the 1981 models, and 23 in 1982. Data for 1983 indicated 22.6 pounds of zinc die castings were used in the average car. In 1984 the figure dropped to 21.7 pounds, while in 1985 it declined to an estimated 20.2 pounds per vehicle.

1984	76,238 Tons	26.5%
1983	81,071 Tons	27.3%
1982	72,057 Tons	27.0%
1981	79,710 Tons	26.2%
1980	83,767 Tons	26.7%

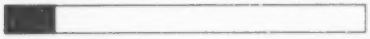


(Scale: 1:2)

Builders hardware, second largest market for zinc at 76,238 tons, took 26.5% of the market. Die casters involved were 217, 54% of the total.

The market covers door and window hardware, locks and keys, furniture and cabinet hardware, hand tools and cutlery, bathroom and plumbing fittings, general hardware, marine hardware, and luggage hardware.

1984	42,691 Tons	14.8%
1983	36,841 Tons	12.4%
1982	34,996 Tons	13.1%
1981	38,427 Tons	12.6%
1980	41,666 Tons	13.3%



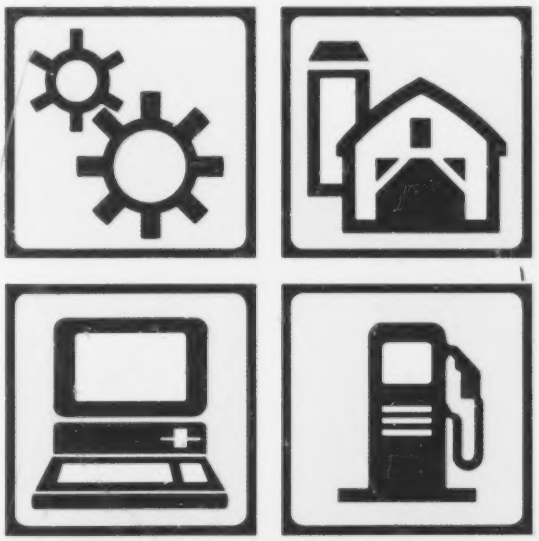
(Scale: 1:2)

Electrical components reached 42,691 tons for 14.8% of the market and a clear hold on third place among zinc die cast markets. The end-use is shared by 159 die casters, 39% of the producers.

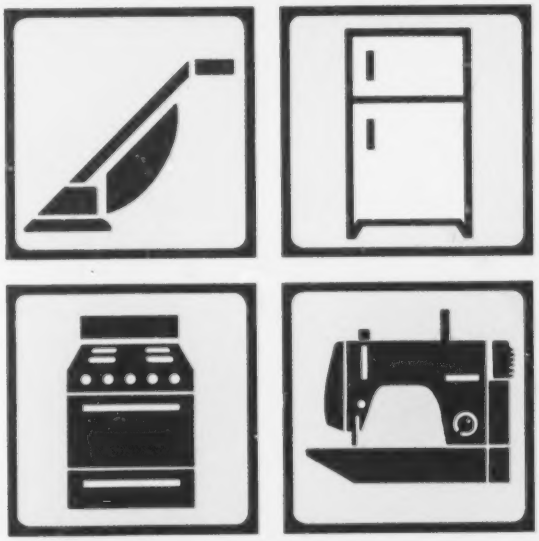
The market includes conduit fittings, switches, plugs and sockets, telecommunication equipment, switch gear, pole-line hardware, motor components, lighting fixtures and equipment.

This industrially oriented market, which is more stable than consumer goods, is nevertheless strongly affected by construction, particularly in the residential housing sector.

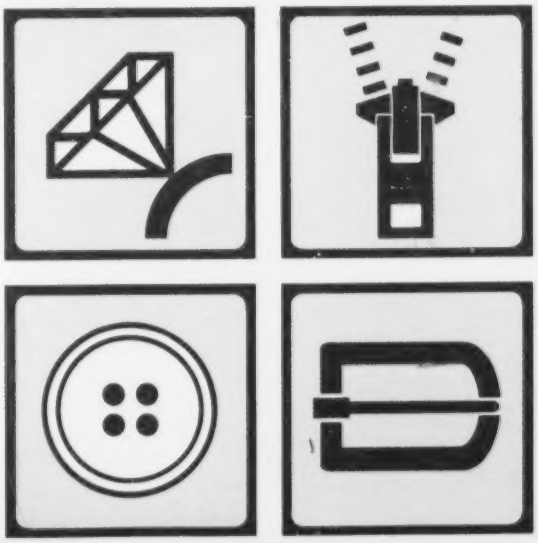
Industrial, Agricultural and Commercial Machinery



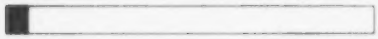
Domestic Appliances



Miscellaneous Industries



1984 23,543 Tons 8.2%



1983 25,755 Tons 8.7%

1982 21,519 Tons 8.1%

1981 25,719 Tons 8.3%

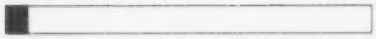
1980 28,014 Tons 8.9%

This category moved back up to fourth place in 1984. Industrial, agricultural and commercial machinery accounted for 23,543 tons and 8.2% of the total. 178 die casters, 44%, were in this market.

The end-use segment includes copying equipment, computers, office equipment, business machines, agricultural and food machinery, vending machines, machine tools, power tools, central heating and air conditioning, power-operated garden equipment, lawn mowers, snow blowers and gasoline service station equipment.

(Scale: 1:2)

1984 21,944 Tons 7.6%



1983 26,816 Tons 9.0%

1982 20,704 Tons 7.8%

1981 26,897 Tons 8.8%

1980 25,128 Tons 8.0%

This market at 21,944 tons, 7.6%, dropped to fifth place in 1984. The number of die casters, 126 or 31%, remained constant.

The market includes vacuum cleaners, floor polishers, refrigerators and freezers, ranges, washing machines and dryers, dishwashers, small appliances, heating appliances, room air conditioners, fans and sewing-machine components.

(Scale: 1:2)

1984 10,446 Tons 3.6%

1983 11,443 Tons 3.9%

1982 11,914 Tons 4.5%

1981 15,465 Tons 5.1%

1980 12,808 Tons 4.1%

Markets named by relatively few die casters were arbitrarily grouped here. The category decreased almost 1,000 tons in 1984 to 10,446, or 3.6% of the total. A total of 107 die casters, 27% of them, reported in this category which sold to markets such as tableware, jewelry and ornaments, fancy goods and souvenirs, zippers, buttons and buckles. This was zinc's sixth largest market for 1984.

(Scale: 2:1)

Sporting Goods and Toys

Scientific and
Professional Equipment

Sound and Television
Equipment

1984	5,497 Tons	1.9%
1983	7,447 Tons	2.5%
1982	7,818 Tons	2.9%
1981	8,663 Tons	2.9%
1980	10,220 Tons	3.2%

(Scale: 2:1)

Zinc's die casting production in this category decreased to 5,497 tons, or 1.9% of the total market, remaining in seventh place. Seventy-nine die casters, or 20%, participated.

The market consists of toys, musical instruments, and sporting goods.

1984	3,620 Tons	1.3%
1983	4,131 Tons	1.4%
1982	6,770 Tons	2.5%
1981	7,556 Tons	2.4%
1980	4,642 Tons	1.5%

(Scale: 2:1)

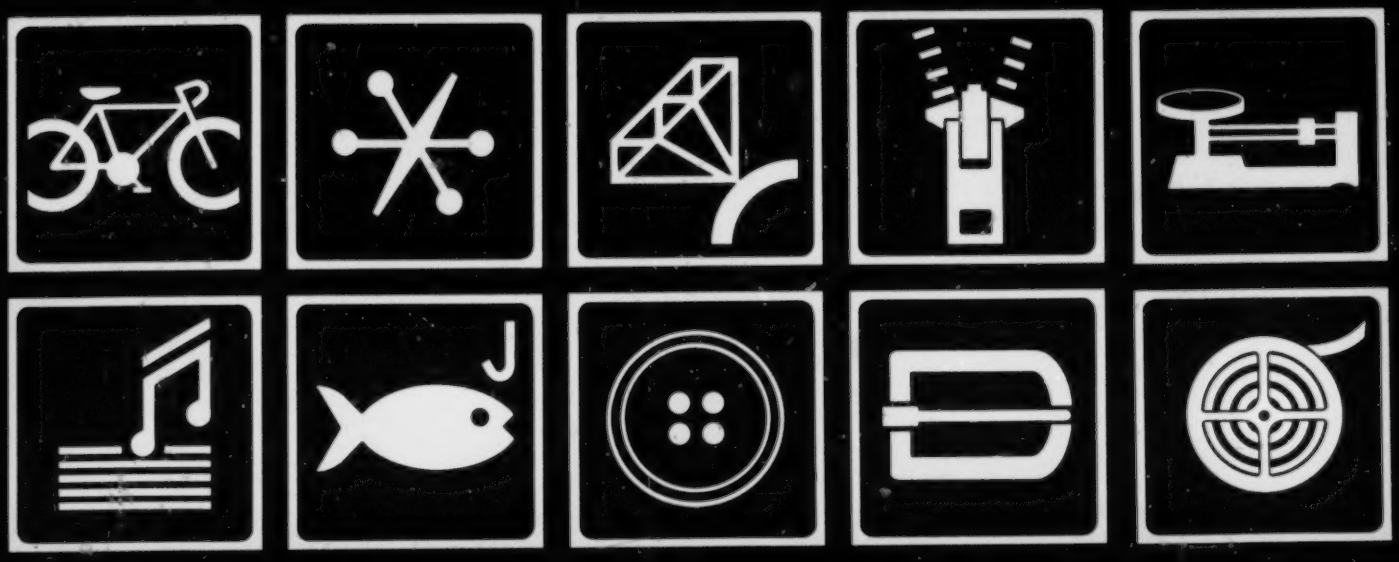
At 3,620 tons, or 1.3% in 1984, this market decreased by over 500 tons from the 4,131 tons recorded in 1983. A total of 94 die casters, 23% of the market, sold to makers of valves, scientific instruments, timing devices, cameras and projectors and optical instruments. This was zinc's eighth largest market for 1984.

1984	2,581 Tons	0.9%
1983	2,640 Tons	0.9%
1982	2,643 Tons	1.0%
1981	3,038 Tons	1.2%
1980	3,969 Tons	1.3%

(Scale: 2:1)

With 2,581 tons and 0.9% of the market, these consumer-oriented products dropped slightly in 1984. Fifty-three die casters, 13%, were involved in this market area. It consists of assemblies and parts for radio, television, record and tape players. This was zinc's ninth largest market for 1984.

Its continuing decline can be attributed to increased foreign imports in the electronics sector.



While every effort has been made to assure that the information given in this booklet is technically correct, Zinc Institute, Inc. does not warrant its accuracy.

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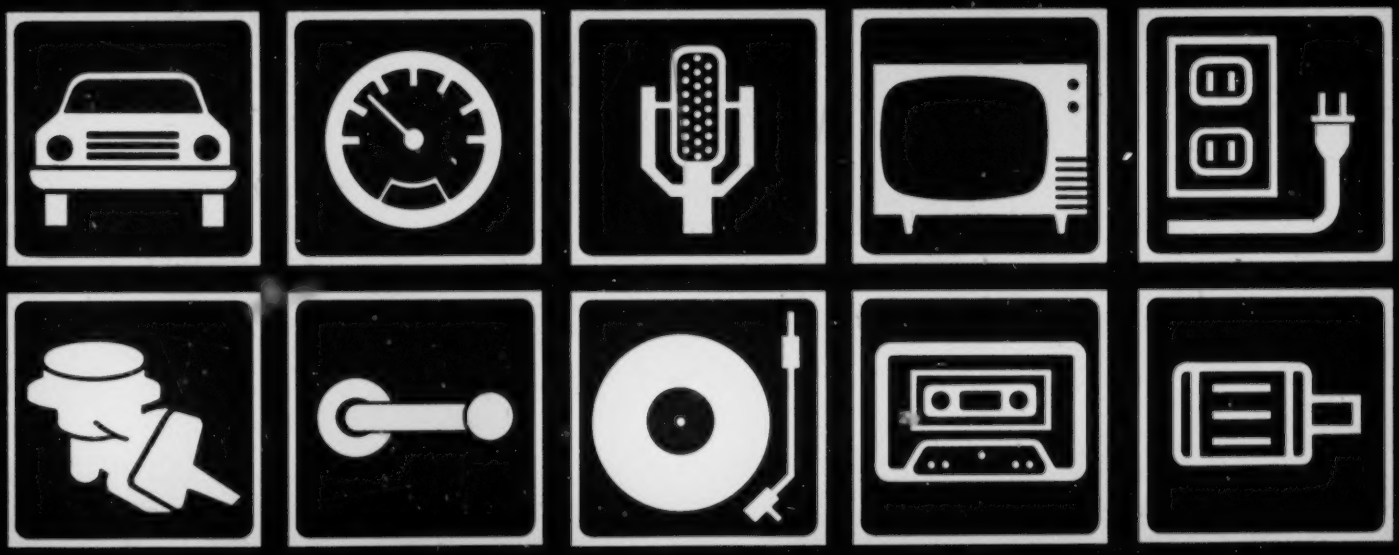

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